

# Work Order ID 67973

Tuesday, April 05, 2011 9:10:27 AM



Page 1

Item ID: D212-664-101

Accept



Setup Start



Revision ID:

Item Name: Crosstube Fwd

Stop



Start Date: 4/5/2011 Start Qty: 1.00



Cust Item ID:

Required Date: 4/21/2011 Req'd Qty: 1.00



Customer:

Reference:

Run Start



Approvals: Process Plan: *[Signature]*

Date: *11-04-15* Tooling:

Date:

QC:

Date:

SPC (Y/N):

Date:

Stop



Sequence ID/  
Work Center ID

Operation  
Description

Set Up/  
Run Hours

Tool ID

Tool #

Plan  
Code

Accept  
Qty

Reject  
Qty

Reject  
Number

Insp.  
Stamp

Draw Nbr

Revision Nbr

D212-664-141

Rev D

100

0.00



DOCUMENT CONTROL

DC

Memo

0.00

Document Control

Photocopy bluefile and create labels as per PPP D212-664-101 CHG001

*ECN 11-54A*

*11 05 09 11*  
*11-4-19*

110

0.00



Pick Kit

Packaging

Memo

0.00

Packaging

Packaging

*[Signature]*

*11-4-19*

120

0.00



BENDING MACHINE - CROSSTUBES

CNC Bend 2

Memo

0.00

CNC Alpha 160 Bender

Bend tube as per Dwg D212-664-141 using CNC bender program 212-fw and Folio D212-664-101

*SAD*

*11-4-19*

*B 67973*

# Work Order ID 67973

Tuesday, April 05, 2011 9:10:27 AM



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Item ID: D212-664-101

Accept



Setup Start



Revision ID:

Stop



Item Name: Crosstube Fwd

Start Date: 4/5/2011 Start Qty: 1.00



Cust Item ID:

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Customer:

Reference:

Run Start



Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Stop



QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Sequence ID/  
Work Center ID

Operation  
Description

Set Up/  
Run Hours

Tool ID

Tool #

Plan  
Code

Accept  
Qty

Reject  
Qty

Reject  
Number

Insp.  
Stamp

130

QC15- Crosstube Dimensional Check

0.00



QC

Memo

0.00

Quality Control

*Subtotal*



140

Crosstubes

0.00



Crosstubes

Memo

0.00

Crosstubes

1-Drill pilot holes in tube as per Dwg D212-664-141 using drill Jig DT8548 & DT8549, using drill table DT8577, set-up towers in hole #7 as per QSI 10

2-Ream hole to finish size in tube as per Dwg D212-664-141 using drill Jig DT8548 & DT8549. Check dimensions between holes, both sides on both cuffs, to ensure alignment with saddle holes.

3-Scribe part # and batch # using vibrating stylus as per Dwg D212-664-141

4-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D212-664-141

*SAN  
11-04-27*

**Work Order ID 67973**

Tuesday, April 05, 2011 9:10:27 AM

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Item ID: D212-664-101

Accept

Setup Start

Revision ID:

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Item Name: Crosstube Fwd

Start Date: 4/5/2011 Start Qty: 1.00

Cust Item ID:

Required Date: 4/21/2011 Req'd Qty: 1.00

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start

QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run Hours

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

150

Crosstubes Chemical Conversion

0.00



HandFXtube

Memo

0.00

Hand Finishing Crosstubes

Chemical Conversion Coat within 24 hours of bending and drilling

SAD  
11-04-27

160

QC5- Inspect part completeness to step on W/O

0.00



QC

Memo

0.00

Quality Control

S u 11/04/27

170

Outsource process - NDT per QSI038 4.1

0.00



Outsource2

Memo

0.00

Outsource process - NDT

Liquid Penetrant Inspection as per QSI 038  
Issue P/O: 13989  
LPI as per ASTM 1417 Level 2  
Attach copy of NDT results to work order

CX 11/05/02 ①

# Work Order ID 67973

Tuesday, April 05, 2011 9:10:27 AM



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Item ID: D212-664-101

Accept



Setup Start



Revision ID:

Stop



Item Name: Crosstube Fwd

Start Date: 4/5/2011 Start Qty: 1.00



Cust Item ID:

Required Date: 4/21/2011 Req'd Qty: 1.00



Customer:

Reference:

Run Start



Approvals: Process Plan: Date: Tooling: Date:

Stop



QC: Date: SPC (Y/N): Date:

Sequence ID/  
Work Center ID

Operation  
Description

Set Up/  
Run Hours

Tool ID

Tool #

Plan  
Code

Accept  
Qty

Reject  
Qty

Reject  
Number

Insp.  
Stamp

180



Packaging

Receive & Inspect for Damage & Mat'l Certs  
Packaging

0.00

Memo

0.00

Packaging

Ensure copy of NDT results attached to work order.

4/5/2 (1)

190



QC

Quality Control

QC5- Inspect part completeness to step on W/O

0.00

Memo

0.00

Inspect for damage & ensure results are as per Dwg D212-664-141

11 05 02 (1)

# Work Order ID 67973

Tuesday, April 05, 2011 9:10:27 AM



Page 5

Item ID: D212-664-101

Accept



Setup Start



Revision ID:

Item Name: Crosstube Fwd

Stop



Start Date: 4/5/2011 Start Qty: 1.00



Cust Item ID:

Required Date: 4/21/2011 Req'd Qty: 1.00



Customer:

Reference:

Run Start



Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

200

Spray Painting per QSI005 4.2

0.00



SprayPaint

Memo

0.00

Spray Painting

1-Prime inside and outside crosstube as per QSI 005 4.2  
2-Paint outside crosstube with White Imron as per QSI 005 4.2

PRIME:

Start Time: \_\_\_\_\_

Finish Time: \_\_\_\_\_

11-05-03

see DFO  
attached

PAINT:

Start Time: \_\_\_\_\_

Finish Time: \_\_\_\_\_

11-05-04

RT 11-05-04



210

QC14- Inspect Spray Paint

0.00



QC

Memo

0.00

Quality Control

Then, Wrap in plastic bag to protect from scratches

11 05 04 (1)

**Work Order ID 67973**

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Tuesday, April 05, 2011 9:10:27 AM

Item ID: D212-664-101

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Setup Start



Revision ID:

Stop



Item Name: Crosstube Fwd

Start Date: 4/5/2011 Start Qty: 1.00



Cust Item ID:

Required Date: 4/21/2011 Req'd Qty: 1.00



Customer:

Reference:

Run Start



Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Stop



QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run Hours

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

220

0.00



Crosstubes

Crosstubes

Memo

0.00

Crosstubes

1- Lightly scuff the bonded area using a 320 grit sand paper and clean the area with 41058 wash 'n' wipe  
2- Install supports with magnobond as per QSI 015. Adhere for for 12 Hrs  
A/R 6398 Magnobond Batch: 116677  
3- Torque bolts as per dwg

2T 11-05-06

230

0.00



QC6- Inspect dimensions to drawing

QC

Memo

0.00

Quality Control

11-05-09 (1)

240

0.00



Pick Kit

Packaging

Memo

0.00

Packaging

11-05-09 (1)

**Work Order ID 67973**

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Page 7

Item ID: D212-664-101

Accept

Setup Start

Revision ID:

Stop

Item Name: Crosstube Fwd

Start Date: 4/5/2011 Start Qty: 1.00

Cust Item ID:

Required Date: 4/21/2011 Req'd Qty: 1.00

Customer:

Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Run Start

QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Stop

Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run Hours

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

250

QC4- 100% Inspect kits for completeness

0.00



QC

Memo

0.00

Quality Control

11/12/9 11 05 29 17

260

Packaging

0.00



Packaging

Memo

0.00

Packaging

Identify and pack for shipping as per PPP D212-664-101

Rev 9

11/12/9 11/12/9

270

QC21- Final Inspection - Work Order Release

0.00



QC

Memo

0.00

Quality Control

11/15/9 11/15/9  
MF  
11-05-09

# Picklist Print

Tuesday, April 05, 2011 9:10:34 AM

Page 1

Work Order ID: 67973

Parent Item: D212-664-101

Parent Item Name: Crosstube Fwd



Start Date: 4/5/2011

Required Date: 4/21/2011

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP Rev:E 04.02.16 Reformat: KJ/DS  
IPP Rev:F 06-03-29 Remove Comments on Pick List JLM  
IPP Rev:G 07-04-30 As per Rev C JLM

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D212-664-101TRN  Crosstube Turning Detail		Manufactured	No			110	Each	2.0000	1	1			
				<u>Location</u>	<u>Loc Qty</u>		<u>Loc Code</u>						
				FG046	2		B68298		SAD 11-04-09				
				67862	1								
				67863	1								
D3595-063-450  RUBBER CUSHION		Manufactured	No			230	Each	71.0000	4	4.210526			
				<u>Location</u>	<u>Loc Qty</u>		<u>Loc Code</u>						
				LG	66								
				67353	66								
				LG055	5								
				67067	5								
MS21920-28 -24  Clamp(per MIL-DTL-8783C)		Purchased	No			220	Each	60.0000	4	4			
				<u>Location</u>	<u>Loc Qty</u>		<u>Loc Code</u>						
				LG050	60								
				116264	10								
				117279	50								

68157

104550 \* 4

PTO



# Picklist Print

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Page 2

Work Order ID: 67973

Parent Item: D212-664-101

Parent Item Name: Crosstube Fwd

Start Date: 4/5/2011

Required Date: 4/21/2011

Start Qty: 1.00

Required Qty: 1.00

D2893-1

Manufactured No

220

Each

11.0000

2

2



2.75 Support

67619 x2



RT 11-05-03

Location

Loc Qty

Loc Code

LG052

11

66698

11

Manufactured No

240

Each

21.0000

1

1

D3428-1



Placard

Location

Loc Qty

Loc Code

ST053

21

66115

9

66961

12

Purchased No

240

Each

92.0000

4

4

AN6-35A



BOLT

Location

Loc Qty

Loc Code

ST343

92

113422

30

115698

12

116528

50

Purchased No

240

Each

7.0000

4

4

AN6-36A



Bolt

Location

Loc Qty

Loc Code

ST343

7

117010

7

Tuesday, April 05, 2011 9:10:35 AM

Shop Packet Print

Page 2

# Picklist Print

Tuesday, April 05, 2011 9:10:35 AM

Page 3

Work Order ID: 67973

Parent Item: D212-664-101

Parent Item Name: Crosstube Fwd



Start Date: 4/5/2011

Required Date: 4/21/2011

Start Qty: 1.00

Required Qty: 1.00

MS21042L6

Purchased

No

240

Each

90.0000

6

6



Nut

Location

Loc Qty

Loc Code

ST300

90

116373

5

116548

85



11 7 343 24

*[Signature]*

AN960JD616

NAS1149D0663J

Purchased

No

240

Each

0.0000

18

18



Washer



11 654 89

11/6289 (4/10/2011)

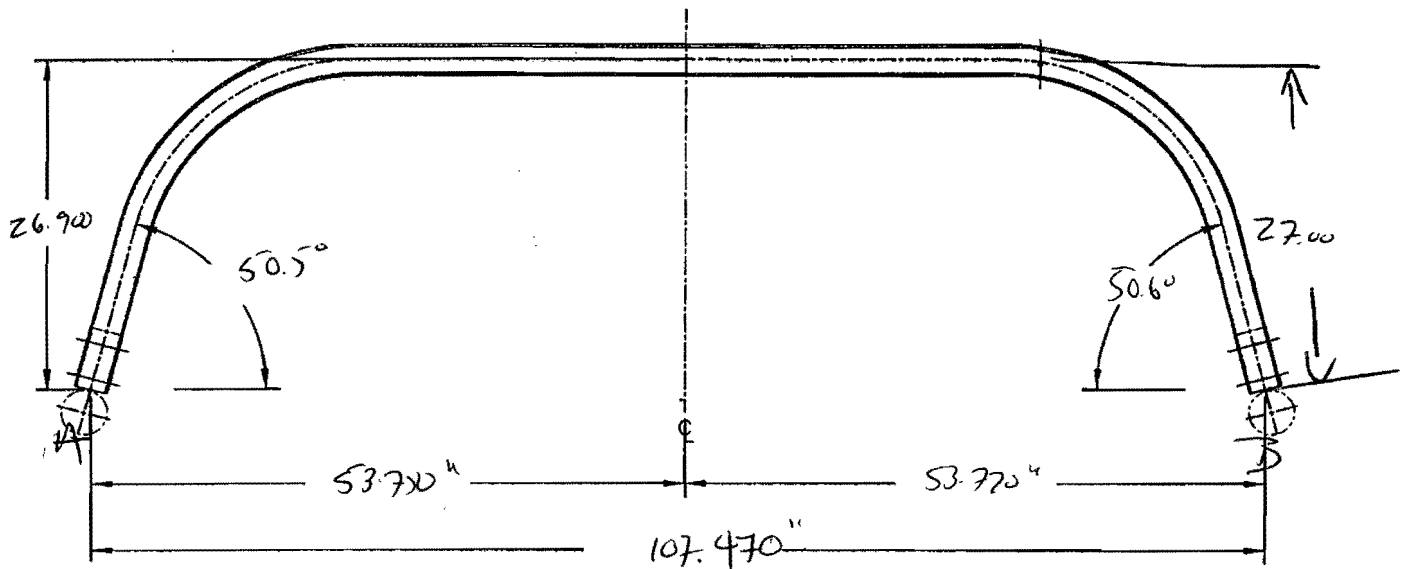
Tuesday, April 05, 2011 9:10:35 AM

Shop Packet Print

Page 3

<b>DART AEROSPACE LTD</b>		<b>Work Order:</b> 67973
<b>Description:</b> Crosstube High Fwd (205/212/412)		<b>Part Number:</b> D212-664-101
<b>Inspection Dwg:</b> D212-664-141	<b>Rev:</b> D	<b>Page 1 of 1</b>

Required Dimension	Min	Max
Height	26.79	27.05
1/2 Span	53.59	53.85
Angle	49	52
Total Span	107.18	107.7



Comments

QC15 Inspection	S
Date	11/04/20

Rev	Date	Change	Revised by	Approved
A	07.02.06	New Issue	KJ/JM	
B	07.05.31	Dimensions updated per Dwg Rev C	KJ/JM	
C	10.04.01	Dwg Rev updated	KJ	

Item	Qty -141	Qty -141B	Part Number	Description
1	X		D212-664-141	CROSSTUBE ASSEMBLY (205/212/412 HIGH FWD)
2		X	D212-664-141B	CROSSTUBE ASSEMBLY (214 HIGH FWD)
3	1	1	D6005-128	CROSSTUBE
4	2	2	D2893-1	SUPPORT
5	4	4	D3595-063-450	RUBBER CUSHION
6	4	4	MS21920-25	CLAMP (OR MS21920-26)
7	A/R	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)

# **GENERAL NOTES:**

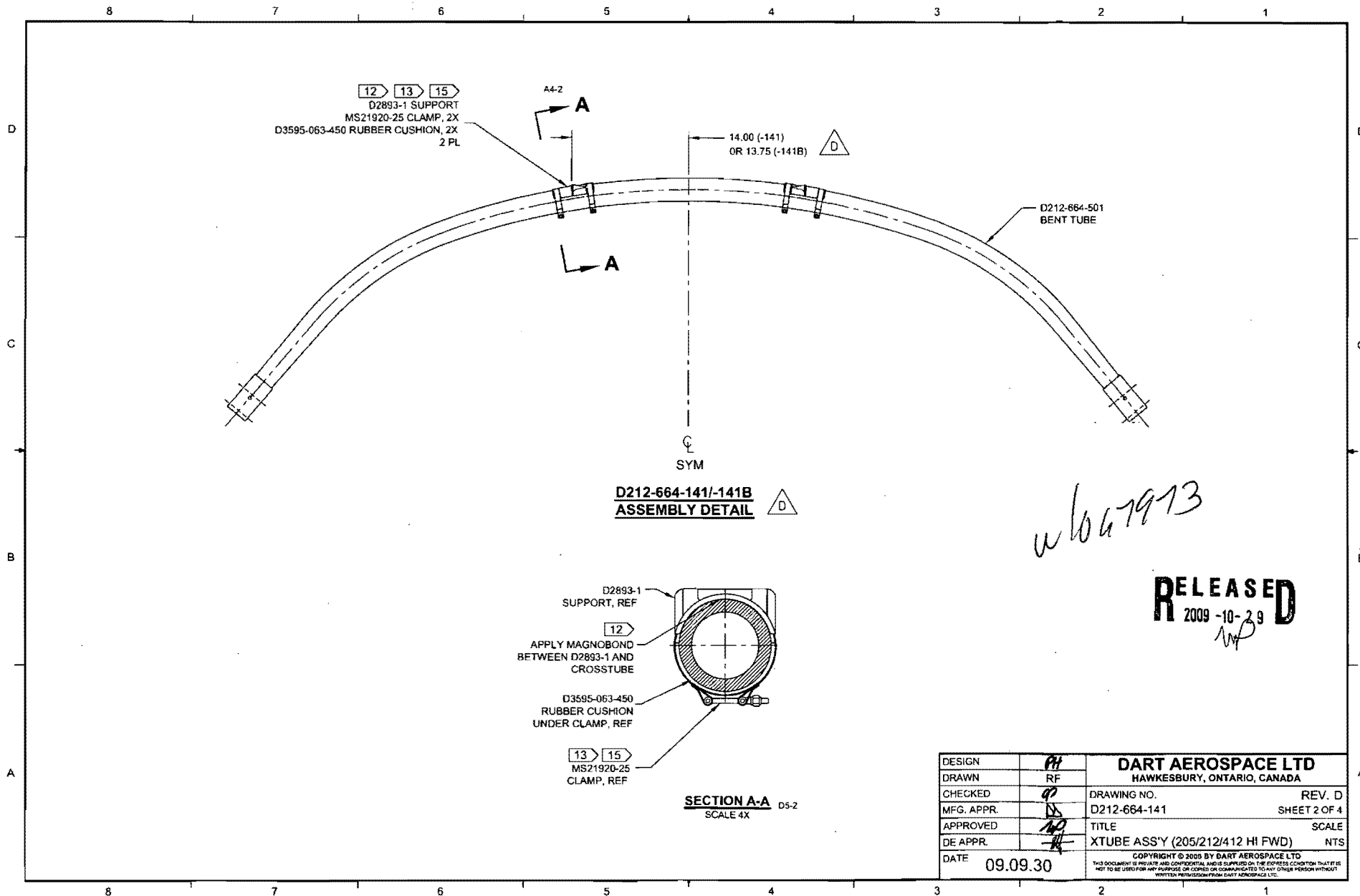
- 1) MATERIAL: MANUFACTURED FROM D6005-128  
FINISHED LENGTH = 126.514±0.020
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1  
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2  
PAINT OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: SCRIBE DART PART NUMBER "D212-664-XXX" AND BATCH NUMBER ON INSIDE OF CUFF USING VIBRATING STYLUS
- 7) WEIGHT: D212-664-141 = 33.6 lbs (PER IIN-D212-664)  
D212-664-141B = 33.6 lbs (PER IIN-D212-664)
- 8) PART IS SYMMETRIC ABOUT CENTERLINE.
- 9) RUN CUTTER OFF PART. BLEND OUT EDGE LONGITUDINALLY. TRANSITION SHOULD BE SMOOTH.
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 3 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 12) INSTALL D2893-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2893-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 13) INSTALL MS21920-25 CLAMPS (OR -26) WITH D3595-063-450 RUBBER CUSHIONS TO SECURE THE C2893-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE OF CROSSTUBE SUPPORT.
- 14) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

SHOP COPY  
RETURN TO  
ENGINEERING  
UNCONTROLLED COPY  
SUBJECT TO AMENDMENT  
WITHOUT NOTICE  
WORK ORDER  
NO. 67973

*211-04-5*

**RELEASED**  
2009-10-29  
*MT*

D	REFORMAT/REVISE GENERAL NOTES/PART LIST; REORGANIZED VIEWS AND REFORMATTED DRAWING TO CURRENT STANDARDS; ADD -141B (ZN B4-2, D4-2); REMOVED REF & ADD TOLERANCES (ZN B4-3, C6-3, C8-3 & B6-3); RELOCATED FLAG #6 PER PAR 08-046 (ZN A5-3); MOVED TURNING DETAIL & UPDATED TOLERANCE TO SHEET 4	RF	09.09.30
C	REMOVE #51 ABRASION STRIP; ADD MAGNOBOND 6398, CUSHION, REVERSE CLAMPS	PH	07.03.08
B	ADD HOLES FOR COMPATABILITY WITH BHT/AA SKIDTUBES	PH	05.02.04
A	NEW ISSUE	PH	00.12.12
REV.	DESCRIPTION	BY	DATE
DESIGN	<i>PH</i>	<b>DART AEROSPACE LTD</b> HAWKESBURY, ONTARIO, CANADA	
DRAWN	RF		
CHECKED	<i>PH</i>	DRAWING NO.	REV. D
MFG. APPR.	<i>PH</i>	D212-664-141	SHEET 1 OF 4
APPROVED	<i>PH</i>	TITLE	SCALE
DE APPR.	<i>PH</i>	XTUBE ASSY (205/212/412 HI FWD)	NTS
DATE	09.09.30	COPYRIGHT © 2000 BY DART AEROSPACE LTD. THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	

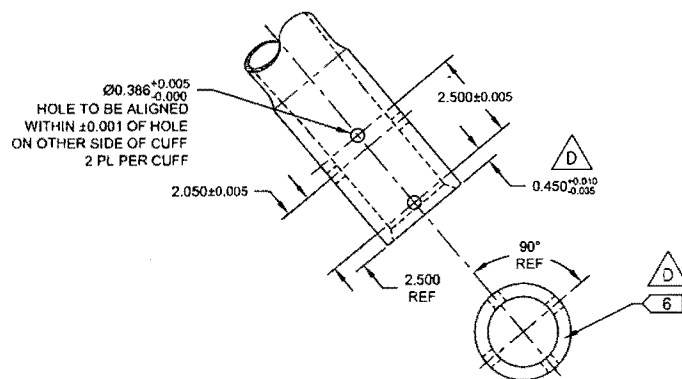


**D212-664-501**  
**BENDING AND DRILLING DETAIL**

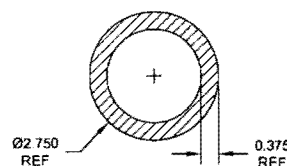


*u/b 47923*

**RELEASED**  
2009-10-29

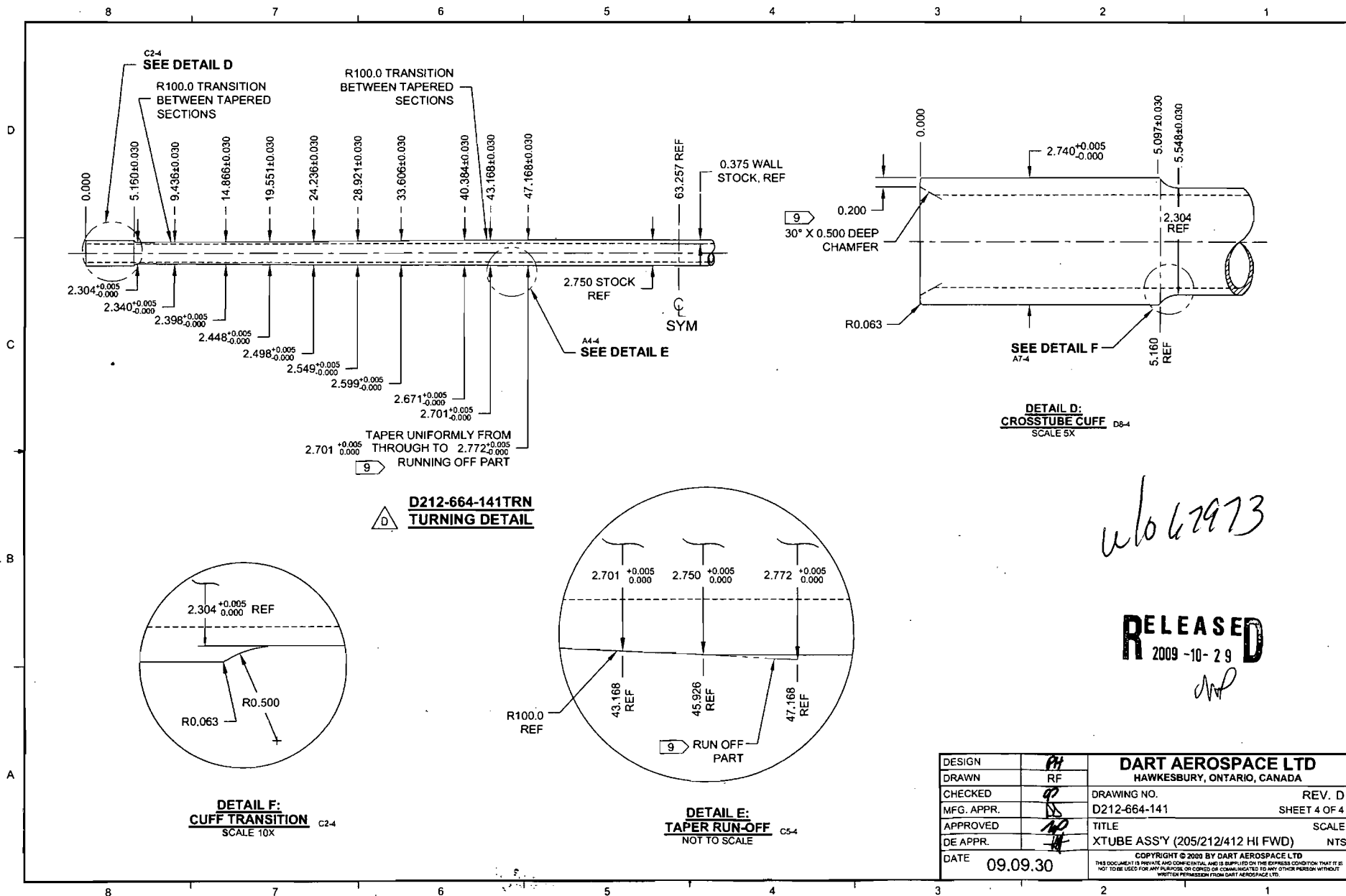


**VIEW C-C: CUFF DETAIL** C2-3  
SCALE 3X



**SECTION B-B** C4-3  
SCALE 4X

DESIGN	PH	<b>DART AEROSPACE LTD</b>	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	Q	DRAWING NO.	REV. D
MFG. APPR.	Q	D212-664-141	SHEET 3 OF 4
APPROVED	Q	TITLE	SCALE
DE APPR.	Q	XTUBE ASS'Y (205/212/412 HI FWD)	NTS
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DESIGN	PH	<b>DART AEROSPACE LTD</b>	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	QP	DRAWING NO.	REV. D
MFG. APPR.	DS	D212-664-141	SHEET 4 OF 4
APPROVED	AP	TITLE	SCALE
DE APPR.	AP	XTUBE ASS'Y (205/212/412 HI FWD)	NTS
DATE	09.09.30	<small>COPYRIGHT © 2005 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.</small>	

DRAWING NO. D212-664-141	TITLE XTUBE ASSY (205/212/412 HI FWD)	REV. D	DART AEROSPACE LTD ENGINEERING ORDER		D.E.O. NO. D212-664-141-D-1	SHEET NO. SHEET 1 OF 2	SCALE NTS
DRAWN	CHECKED	MFG. APPR.	APPROVED	DE APPR.			
DATE 11.04.07	DATE 11.04.11	DATE 11.04.12	DATE 11/04/12	DATE 11.04.12			

**PURPOSE:**

ADD AN INSPECTION WINDOW TO UNDERSIDE OF CROSSTUBE.

**CHANGE:**

NOTES 2 OF SHEET 1 IS AMENDED AS FOLLOWS:

**IS:**

- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1  
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2  
MASK UNDERSIDE OF CROSSTUBE AS SHOWN (HATCHED AREA) AND  
PAINT OUTSIDE PER DART QSI 005 4.2  
REMOVE MASKING AND APPLY CLEAR COAT

**WAS:**

- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1  
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2  
PAINT OUTSIDE PER DART QSI 005 4.2

**RELEASED**  
2011-04-18



DRAWING NO. D212-664-141	TITLE XTUBE ASSY (205/212/412 HI FWD)	REV. D	<b>DART AEROSPACE LTD ENGINEERING ORDER</b>	D.E.O. NO. D212-664-141-D-1	SHEET NO. SHEET 2 OF 2	SCALE NTS
DRAWN	CHECKED	MFG. APPR.	APPROVED	DE APPR.		
DATE 11.04.07	DATE 11.04.11	DATE 11.04.12	DATE 11/04/12	DATE 11.04.12		

**IS:**

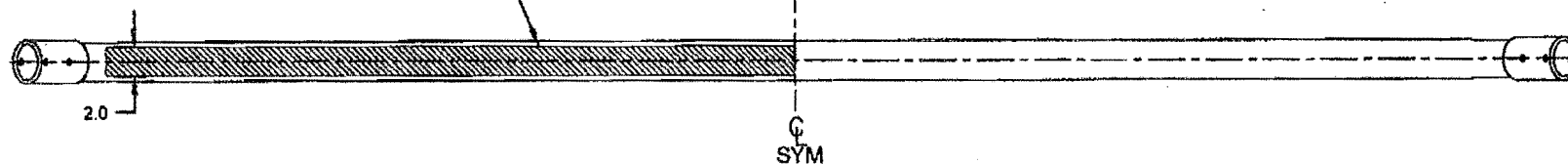


**WAS:**

D212-664-801  
BENT TUBE

**D212-664-141/-141B  
ASSEMBLY DETAIL**

MASK AREA PRIOR TO PAINTING,  
REMOVE MASKING AFTER PAINT  
AND APPLY CLEAR COAT



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2.

Page 1 of 1

[illegible]



## LIQUID PENETRANT TEST REPORT

P- 05602

CLIENT

ATTENTION

ADDRESS

PROJECT

ITEM(S) EXAMINED

DATE

ACUREN JOB NO.

PO/NO.

WORK LOCATION

ACCEPTANCE STD.

PAGE

TIME

AM

PM

DART AEROSPACE

LYNDA LACELLE/CHANTAL/IAN

1270, ABERDEEN ROAD

HAWKES BURY

WET FLUORESCENT LIQUID PENETRANT INSPECTION ON 4 CROSSSTUBES &amp; 2 REPAIRS AREAS

SEE BELOW

MAY/02/08

188-11-02114

13989

AS ADDRESS

ASTM1417/25T-03B

REV./DATE 2005

JOB DESCRIPTION

PROCEDURE NO. LT-002

REV./DATE 2008

TECHNIQUE NO. LT-002

REV./DATE 2008

ART NO.

MATERIAL ALUMINUM

THICKNESS

N/A

SCOPE

PERFORMED A WET FLUO LPI ON 100% OF THE EXTERNAL SURFACE ON 4 CROSSSTUBES

PERFORMED A WET FLUO LPI ON 2 REPAIRS AREAS ON 1 CROSSSTUBE

TEST DETAILS

METHOD

☒ FLUORESCENT☐ VISIBLE☒ WATER WASH☐ SOLVENT REMOVABLE☐ POST EMULSIFIED

FAMILY BRAND

MAGNAFLUX

BLACK LIGHT S/N 13798

OUTPUT > 1000  $\mu$ W/cm<sup>2</sup>

AMBIENT &lt; 2 fc

ENETRANT

ZL-67

MINIMUM DWELL TIME

10

MIN.

LIGHTING EQUIP.

☐ FLASHLIGHT☐ TROUBLELIGHT☐ OUTPUT > 100 fc @ SURFACE

ENETRANT REMOVER

H60

MINIMUM DRY TIME

&gt;10

MIN.

OTHER

DEVELOPER

SKD/SD

MINIMUM DWELL TIME

10

MIN.

LIGHT METER S/N

CAL DUE DATE AUG/05/08

DEVELOPER TYPE

☒ NON AQUEOUS☐ AQUEOUS☐ DRY

TEST SURFACE

SURFACE CONDITION

☐ AS GROUND☐ AS WELDED☐ MACHINED☐ SHOT BLASTED☒ CLEAN BARE METAL

SURFACE TEMPERATURE

☐ < -4°C/20°F☐ -4°C/20°F TO 10°C/50°F☒ 10°C/50°F TO 52°C/125°F☐ > 52°C/125°F

RESULTS-

☐ METRIC☐ IMPERIAL

1 CROSSSTUBE (2 REPAIRS AREA) W.O. ID 68088 ✓

2 CROSSSTUBE W.O. ID 67376 ✓

3 CROSSSTUBE W.O. ID 67378 ✓

4 CROSSSTUBE W.O. ID 67973 ✓

5 CROSSSTUBE W.O. ID 67974 ✓

ITEM ID: D206-667-107BL REVID PRELIM (206 Fwd)

ITEM ID D212-664-201 AFT

ITEM ID D212-664-201 AFT

ITEM ID D212-664-101 Fwd

ITEM ID D212-664-101 Fwd

NO RELEVANT INDICATION WAS DETECTED

AS PER APPLICABLE STANDARD

11-05-02

Scope of Services

Acuren Group Inc. to perform services extends only to those services provided for in writing. Under no circumstances shall such services extend beyond the performance of the requested services. It is expressly understood that all descriptions, comments and expressions of opinion reflect the opinions or observations of Acuren Group Inc. based on information and assumptions supplied by the owner/operator and are not intended nor can they be construed as representations or warranties. Acuren Group Inc. is not assuming any responsibilities of the owner/operator and the owner/operator retains complete responsibility for the engineering, manufacture, repair and use decisions as a result of the use of other information provided by Acuren Group Inc. In no event shall Acuren Group Inc.'s liability in respect of the services referred to herein exceed the amount paid for such services.

Standard of Care

performing the services provided, Acuren Group Inc. uses the degree, care and skill ordinarily exercised under similar circumstances by others performing such services in the same or similar locality. No other warranty, expressed or implied, is made or intended by Acuren Group Inc.

SIGNATURES

CLIENT REPRESENTATIVE

PRINT

SIGNATURE

DTR # E44845

TECHNICIAN (SIGNATURE):

PRINT

NAME (PRINT):

VICK DESROSIERS

1<sup>ST</sup> TECHNICIAN2<sup>ND</sup> TECHNICIAN

CGSB LEVEL

SNT LEVEL

CGSB LEVEL

SNT LEVEL

CGSB REG. NO.

3049

CGSB REG. NO.

REPORT

REVIEWED BY:

NAME

INITIALS

WHITE - CLIENT COPY

CANARY - OFFICE COPY

PINK - TECHNICIAN COPY

GOLD - OFFICE COPY

PT Sept 2005